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ABSTRACT

Commitment is a self-control technique to induce weight loss. Two targets of commitment contingencies, completion of the study and behavior change, were examined among 42 female and 3 male subjects who made a monetary deposit to enroll in the 10-week program. The treatment consisted of self-monitoring of eating and exercise behavior. Subjects were randomly assigned to one of three treatment groups: (1) no commitment; (2) study completion commitment; and (3) study completion plus behavior change. Attrition, three measures of study participation, behavior change, and short- and long-term weight loss were evaluated. The no-commitment group had the greatest attrition rate. Only one participation variable was affected; the behavior change commitment increased the frequency of self-monitoring, and resulted in greater change in eating behavior but did not affect change in exercise behavior. The number of weigh-ins attended and frequency of self-monitoring were positively related to weight loss. Change in exercise behavior predicted weight loss; change in eating did not. Commitment contingencies have a narrow effect in a weight loss program and little generalization to non-targeted behavior occurs. (Author/NRB)

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# COMMITMENT CONTINGENCIES IN THE BEHAVIORAL TREATMENT OF OBESITY

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# Commitment Contingencies in the Behavioral Treatment of Obesity

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In recent years behavioral treatments of obesity have flourished. These treatments focus upon the antecedents and consequences of the weight-relevant behaviors of eating and exercise. Commitment is one antecedent variable which has been frequently used in the behavioral treatment of obesity.

Commitment is the deposit of something valuable to the subject which is returned contingent upon the performance of a specified set of behaviors. In the behavioral treatment of obesity this commitment has typically been a sum of money which is returned to the subject based upon some aspect of treatment success. Targets of commitment have been completion of the program, weight loss, or a change in weight relevant behavior.

A recent study by Hagen, Foreyt, and Durham (1976) examined the effect of the amount of this commitment. The commitment was refunded if the subjects completed the research; fines were also imposed for missed meetings. These researchers found that amount of commitment was inversely related to

the likelihood of attrition from the research. An unexpected finding was that the amount of the commitment was also inversely related to weight loss for those subjects who completed the research. That is, the groups of subjects which had the lowest rate of attrition also lost the least weight.

A recent unpublished study by Norton and Powers found that while commitment tended to deter attrition weight loss was not affected. That is, subjects who remained in the research under the inducement of a commitment did not lose less weight than subjects who remained in the research without the inducement of a commitment.

While the attrition results of the Norton and Powers research support the results of Hagen et al the weight loss results do not. One difference between these two programs was the contingencies of commitment used. In the Hagen et al research the main target of commitment was study completion. In the Norton and Powers program change in weight relevant behavior (eating and exercise) were also targetted.

The rationale of the present study was to explore the difference in commitment contingencies in the above studies. In this research a no commitment group was compared to both a study completion commitment contingency group and a study completion plus behavior change commitment contingency group. The hypotheses were that the study completion commitment would deter attrition and that the behavior change commitment would

facilitate weight loss. The latter group, therefore, in addition to having a low rate of attrition, should exhibit more weight loss than the second group--study completion only commitment. Both of these groups should have lower rates of attrition than the first, or no commitment, group.

## Methods

### Subjects

The accessible population for this research was a northern Utah community in which there was a state university. Forty-five subjects, 42 females and 3 males, were initially recruited into the research. The average age of these subjects was 28.6 years while the average weight was 163.4 pounds. Of these, 26 were exposed to the commitment contingencies of this experiment.

### Procedures

The subjects in this research were exposed to a 10 week program. The first two weeks of this treatment were devoted to a self-monitoring phase and the last eight weeks were an attempt to lose weight.

Two weigh-ins per week were held and one meeting was conducted per week. At these weekly meetings subjects received social reinforcement for weight loss and were educated in the stimulus control of eating behavior.

The treatment package consisted of self-monitoring of eating and exercise behavior. Goal setting with eating

and exercise behavior was included in the treatment package as were social reinforcement and punishment for weight loss and gain, and education in the stimulus control of eating behavior.

Treatment groups

Three treatment groups were studied. Subjects were randomly assigned to one of three groups:

No commitment. In the no commitment group subjects initially made a $15.00 deposit. This deposit was returned one week later with the rationale that it was used as a screening device for unmotivated subjects.

Study completion only. In the study completion only group subjects made a $15.00 commitment which was returned only if they completed the study.

Study completion plus behavior change In addition to the study completion contingencies subjects in this group were also required to meet weekly goals set on their eating and exercise behavior. ( All subjects set goals. Only in this group was there any monetary consequences for meeting these goals.)

Dependent measures

Several dependent measures were examined. These were: attrition, participation in the program (number of weigh-ins attended, self-monitoring records completed, and attendance at weekly meetings), self-reported behavior change, and weight loss at post-treatment and 2, 4, and 8 months later.

## Results

### Attrition

Commitment contingencies had a statistically significant effect on the variable of attrition ($\chi^2$=9.55, df=2, p<.01). The no commitment group lost 80% (4 of 5) of its subjects, the study completion only group lost only 12% (1 of 8) of its subjects, and the study completion plus behavior change group lost only 7% (1 of 13) of its subjects. The latter groups were not significantly different from each other ($\chi^2$=.12, df=1, p>.10) but were different from the no commitment group ($\chi^2$=5.70, df=1, p<.01).

### Participation

Due to the attrition rate in the no commitment group all further comparisons will be made between the study completion only group and the study completion plus behavior change group. One of the three participation variables was found to be significantly affected by the commitment contingencies. This was the completion of self-monitoring records (F=5.16, df=1/18, p<.04). The study completion plus behavior change group was found to have a higher rate of self-monitoring completion (5.8 per week) than did the study completion only group (4.7 per week).

### Behavior-change

The addition of a behavior change contingency had the effect of reducing eating behavior to a greater extent than a

study completion only contingency ($F$=3.37, $df$=1/17, $p<.09$). This effect, however, was only marginal. No effect was noted on the change in exercise behavior.

Weight loss

No difference between the two groups was noted on weight loss at post-treatment, 2months, 4 months, or 8 months after treatment.

Correlates of weight loss at post-treatment

Of the three participation variables two were found to be statistically significantly related to weight loss. These were: self-monitoring completion ($r$=.46, $df$=18, $p<.05$) and weigh-ins attended ($r$=.46, $df$=18, $p<.05$). These coefficients were computed only for those subjects completing the research.

Only one of the two behavior change variables was found to be related to post-treatment weight loss. This was the increase in self-reported exercise behavior ($r$=.47, $df$=18, $p<.05$). Again, only subjects completing the research were included in the analyses.

## Discussion

In summary, commitment contingencies appeared to affect attrition, one of the three participation variables, and one of the two behavior change variables. No effect of commitment contingencies was noted on weight loss at post-treatment and at the three follow-ups. Two of the three participation variables

and one of the behavior change variables were statistically significantly related to post-treatment weight loss.

These results support the hypothesis (Hagen et al, 1976, Norton & Powers, unpublished) that a monetary commitment significantly deters attrition. However, the hypothesis that a behavior change contingency would have a positive effect on weight loss was not supported. The behavior change contingency did not add significantly to the effect achieved by the study completion contingency.

The behavior change contingency did, however, enhance the rate of completion of self-monitoring records and the self-reported change in eating behavior. While the latter variable was a target of the commitment contingencies the former was not indicating that some generalization of the contingencies may have resulted.

In terms of non-manipulated correlates of weight loss the relationship between the frequency of weigh-ins attended and weight loss supports the results of Jeffery and Wing (1979) who found that the frequency of experimenter contact was positively related to weight loss. The relationship between the frequency of completion of self-monitoring records and weight loss needs to be further explored by direct manipulation.

The lack of relationship between the reduction in eating behavior and weight loss was surprising. A similar measure used by Bandura and Simon (1977) was found to be related to

weight loss. Several hypotheses could be advanced to explain this difference including the accuracy of self-monitoring, and the use of our weighting system.[1] This difference is important and deserves further exploration.

Two clinical recommendations can be drawn from this research. First, the use of a monetary deposit, even a small one, can have a dramatic negative effect on attrition. Second, the relationship between the behavior targetted by the commitment contingencies and weight loss needs to be firmly established before the variable is targetted in a clinical weight loss program. Two promising variables in the present study were self-monitoring record completion and attendance of weigh-ins.

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[1]Details of this system can be obtained from the first author c/o Department of Psychology UMC 28, Utah State University, Logan, UT 84322.

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